ANNUAL REPORT

for the fiscal year
ending March 31, 1989

Department of the Environment

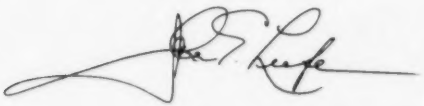
90-07036/

To His Honour
The Honourable Lloyd R. Crouse, P.C.
Lieutenant-Governor of Nova Scotia

May It Please Your Honour:

The undersigned has the privilege to present to your Honour the Annual Report of the Nova Scotia Department of the Environment for the fiscal year ending March 31, 1989.

Respectfully submitted



John G. Leefe
Minister of the Environment

The Honourable John G. Leefe
Minister of the Environment
Province of Nova Scotia

Sir:

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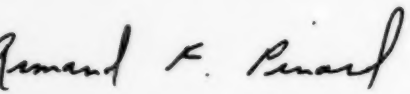

Armand F. Pinard
Deputy Minister

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PURPOSE AND OBJECTIVES

The Nova Scotia Department of the Environment is the responsible agency of the Nova Scotia government for protecting our air, land, and water. The department bears the defined responsibility to safeguard the people of the province from polluting agents or conditions that are harmful to health and to the public enjoyment of natural resources.

Under definitive legislation, the Environmental Protection Act, the Minister of the Environment is responsible for the supervision and control of management, preservation, and protective mechanisms to ensure efficient and non-destructive use of our renewable resources.

LEGISLATION

The department administers the following legislation:

- Environmental Protection Act
- Water Act
- Well Drilling Act
- Beverage Containers Act
- Dangerous Goods and Hazardous Wastes Management Act
- Pest Control Products Act
- The Clean Nova Scotia Foundation Act
- Derelict Vehicles Removal Act

The *Environmental Protection Act* is overall enabling legislation that gives the Minister of the Environment the power to take action to protect the environment. The EPA also sets out a procedure for the operation of the Environmental Control Council.

The *Water Act* gives the department the mandate of protecting watercourses, including their use, allocation, alteration, or pollution. The department is responsible for approving all water rights applications in the province.

The *Well Drilling Act* is designed to provide control standards for well construction contractors, ensuring that they are qualified to properly construct a well, which in turn ensures that water supplies are protected.

The *Beverage Containers Act* is designed to encourage reuse of beverage containers and to discourage littering.

The *Dangerous Goods and Hazardous Wastes Management Act* requires that anyone involved in the use or handling of such materials must report to the Minister the location in which they are kept, approximate quantities, the reasons the materials are being held, and a list of all precautions that have been taken to ensure safe handling and storage.

The *Pest Control Products Act* was designed to prevent pollution from occurring during any stage in the life of a pesticide. The Act makes provision for the establishment of a licensing system, a permit system, and regulations for the use, storage, and handling of pesticides.

The *Clean Nova Scotia Foundation Act* formally establishes the Clean Nova Scotia Foundation as an independent organization with strong government and public support. The Clean Nova Scotia Foundation promotes educational programs aimed at reducing litter in Nova Scotia, thereby enhancing environmental quality.

The *Derelict Vehicles Removal Act* provides the department with the mandate to conduct a Derelict Vehicles Removal Program. The program requires cooperation with municipal governments involved by ensuring monies are available for the removal of such vehicles to a location where they can be prepared for resale as scrap material.

HIGHLIGHTS OF THE 1988–89 FISCAL YEAR

Legislation

The fiscal year ending March 31, 1989 saw great strides being made in the area of new legislation, which will enable the department to deal adequately with emerging environmental issues. During the year, the Clean Nova Scotia Foundation Act and the Derelict Vehicles Removal Act were proclaimed.

As well, royal assent was given to the Environmental Assessment Act, and it will be proclaimed once regulations have been developed. These regulations will be developed following extensive public consultation, a process that began during the fiscal year. The Environmental Assessment Act is designed to ensure that environmental considerations are addressed early in the planning stages of significant development proposals.

Amendments were approved to the Water Act, the Pest Control Products Act, and the Dangerous Goods and Hazardous Wastes Man-

agement Act, increasing fines significantly. The maximum fines went from $500 for a first offence and $1,000 for second to $50,000 per day for a first offence and $75,000 per day for a second and will act as a deterrent to would-be polluters.

Four new acts were introduced in the legislature during the year:

- Litter Abatement Act
- Ozone Layer Protection Act
- Recycling Act
- Youth Conservation Corps Act

Litter Abatement Act

The Litter Abatement Act was designed to discourage littering in Nova Scotia and to encourage municipalities and private industry to conduct clean-up programs. The legislation also gives the Minister the authority to approve packaging that may be sold in Nova Scotia.

Ozone Layer Protection Act

The Ozone Layer Protection Act was designed primarily as a tool whereby, following careful study, the government can ban substances that may tend to cause ozone depletion. This can be accomplished once such substances in use in Nova Scotia are identified and appropriate substitutes are found.

Recycling Act

The Recycling Act was developed to encourage recycling in Nova Scotia and allows government to take a more active role in recycling programs.

Youth Conservation Corps Act

The Youth Conservation Corps Act provides a vehicle whereby the Department of the Environment will establish a Youth Conservation Corps to conduct environmental enhancement projects throughout the province.

Amendments

Amendments were introduced to the following legislation:

- Water Act
- Environmental Protection Act
- Well Drilling Act

Water Act

The amendment to the Water Act has the effect of decentralizing decision making, allowing more decisions to be made on the local level. It gives the Minister the authority to permit a departmental official to order remedial action in the case of an environmental emergency.

Environmental Protection Act

The Environmental Protection Act was amended to give the Minister the authority to order remedial action when damage has been done to the environment and, where that action is not undertaken, to undertake such action and request recovery of costs through the courts.

Well Drilling Act

An amendment was introduced to increase fines found under the penalty section of the Well Drilling Act. The maximum fines will go from $500 to $50,000 per day for a first offence, and for a second or subsequent offence will increase from $1,000 to $75,000 per day, which brings these fines in line with those found in other legislation administered by the department.

Regulations

During the 1988–89 fiscal year, the department developed and implemented the regulations described below.

Asbestos Regulations

The Asbestos Regulations are designed to provide rules for the safe handling and disposal of asbestos.

PCB Storage Regulations

PCB Storage Regulations have been developed to give concise rules governing the safe storage of PCBs in Nova Scotia. Among other items of interest, the regulations ensure that the department knows the exact location of storage facilities and the quantities stored there.

Waste Oil Regulations

Waste Oil Regulations are designed to license people involved in the handling of waste oil in the province and to set out proper uses for it.

Herring Waste Regulations

Herring Waste Regulations prohibit on-land burial of such waste unless given permission by the Minister to dispose of the waste at an approved landfill facility.

Biomedical Waste Incinerator Regulations

Biomedical Waste Incinerator Regulations set out procedures for the operation of these incinerators and state that anyone operating such a facility must have a permit from the department.

Other Highlights

Halifax Harbour Clean-Up

The Province of Nova Scotia signed a $195 million agreement with the federal government to clean up Halifax Harbour. This will be one of the largest municipal sewage waste collection treatment programs ever conducted in Atlantic Canada. At the end of the fiscal year, the Province signed another agreement bringing the municipalities of Halifax, Dartmouth, and the County of Halifax into the program.

Sydney Tar Ponds Clean-Up

Work continued on this federal/provincial program to clean up the Sydney Tar Ponds, the largest chemical waste site in Canada and one of the largest in North America. Test burns of tar pond sludge were conducted to determine the best route for incineration.

Acid Rain

The department continued its efforts to reduce acid rain emissions in Nova Scotia by conducting an inventory of existing emissions and identifying where reductions can be accomplished.

Environmental Enhancement Summer Employment Program

The department conducted a very successful summer employment program aimed at initiating clean-up projects and making youth more environmentally aware. Over 200 students were hired to remove natural blockages from streams and to clean up litter from unsupervised beach areas, roadsides, and selected harbour areas.

Reorganization

The Sydney office was reorganized under its own regional manager. Reporting procedures for staff were streamlined, providing more effective communications within the department.

ENVIRONMENTAL ASSESSMENT DIVISION

The Environmental Assessment Division, the largest operating division of the Nova Scotia Department of the Environment, has two important areas of responsibility. The division manages the provincial water resource by promoting optimal development and protection, including enforcement of the Water Act. The division also reviews and assesses individual, municipal, industrial, and government projects for their environmental acceptability, including enforcing permit terms and conditions under the Environmental Protection Act.

Also included in this division is the Canada–Nova Scotia Flood Damage Reduction Program and advisory services for departmental policy development.

The division contains five sections: Waste Management, Engineering Construction and Government Programs, Environmental Development, Water Resources Planning, and Water Management.

WASTE MANAGEMENT SECTION

There are two main areas of responsibility in this section.

- *Industrial Pollution Control* provides an assessment and review program by assisting industry with an evaluation of proposed pollution abatement facilities while ensuring industry compliance with permit requirements.

- *Solid Waste Management* provides technical assistance and advice to municipalities regarding acceptable methods for disposing of solid wastes. The section also provides study grants to municipalities for planning solid waste management systems.

Since the inception of the solid waste program in 1975, 13 landfills and three incinerators have been developed. In Nova Scotia, 70 per cent of all municipal solid wastes are now taken to these facilities.

Municipal incinerator guidelines were developed during the year. These guidelines, when complete, will regulate municipal incineration and will phase out the remaining open dump operations throughout the province.

A total of $155,000 in study assistance was given to six municipalities for recycling studies and pilot recycling programs.

Technical staff revised the Pit and Quarry Guidelines, which were developed in 1978. The objective of the guidelines is to control the environmental impacts associated with pit and quarry operations.

Work on the Sydney Tar Ponds clean-up continued. The consultants worked on the development of an incinerator system that will be used for thermal destruction of the polynuclear aromatic hydrocarbons (PAHs) contained in the sediment of the ponds. This project will take approximately 10 years to complete.

ENGINEERING CONSTRUCTION AND GOVERNMENT PROGRAMS SECTION

This section ensures that environmental concerns are incorporated into the planning and construction of proposed land developments, such as subdivisions, linear projects including highway and utility alignments, and municipal infrastructure projects such as the installation of water and sewage treatment facilities.

Review of Municipal Infrastructure Applications

In the past year, the section reviewed 160 applications for the construction or upgrading of municipal infrastructures. Multi-million dollar expenditures are being incurred in the construction of the following municipal water and sewer treatment facilities.

Springfield Lake Sewer	$4,030,000
North Preston Water and Sewer	$4,675,000
Middle Musquodoboit Water and Sewer	$2,200,000
Eastern Passage Sewer	$1,900,000
Truro Water Treatment Plant	$10,000,000
Colchester Trunk Sewer	$1,150,000

A number of smaller-scale construction projects and pollution control studies were also conducted throughout the province during the year.

Halifax Harbour Clean-Up

The section continues to be involved in the review of all phases of the

Halifax Harbour Clean-Up Project. The signing of the Halifax/Dartmouth Metropolitan Area Development Subsidiary Agreement to clean up Halifax Harbour at an estimated cost of $195,700,000 has resulted in the establishment of a public advisory committee and the funding of an oceanographic study of the Halifax Inlet.

The Public Advisory Committee, chaired by Dr. Robert Fournier, includes participation from the local scientific community and citizen groups. The committee's primary objective is to develop water quality criteria that will help to determine the level of treatment required and the optimum outfall locations(s).

The oceanographic study, to be conducted by ASA Consulting Ltd., will identify residual currents in Halifax Inlet. This information is essential in determining the outfall location(s).

Subdivision Review

Over 500 subdivision applications from around the province were processed during the year. Part of the process is advising on erosion and sediment control measures, reviewing drainage plans and road profiles for the protection of receiving watercourses, and maintaining close liaison with Department of Transportation and Communications staff to ensure that all roads, ditches, and drainage easements are environmentally acceptable. The *Erosion and Sediment Control Manual* has been published to outline the steps a developer can take to eliminate problems.

Highway Alignment and Utility Review

Staff in the section reviewed five large projects submitted by the Department of Transportation and Communications involving highway alignments:

Highway 104	New Glasgow Bypass
Highway 107	Porters Lake/Petpeswick (8 kilometres)
Highway 104	Amherst Twinning
Highway 101	St. Bernard/Meteghan Extension (25 kilometres)
Highway 101	Bridgetown/Annapolis Royal Extension (17 kilometres)

In addition, 22 water rights applications for the same projects were completed, with staff reviewing the adequacy of proposed drainage structures and erosion and siltation control measures.

Other Projects

This section has reviewed the planning and construction of the Upper Clements Family Theme Park in Annapolis County, as well as other large land development proposals including: Charles Island Development in Lower Ship Harbour; Abbercombec Ocean Village in Clam Bay; the Sheet Harbour Industrial Park; and the East Hants Industrial Park.

ENVIRONMENTAL DEVELOPMENT SECTION

The Environmental Development Section has three main areas of responsibility: Pesticide Management, Environmental Review, and Environmental Studies.

Environmental Studies

Environmental Studies has traditionally focused on concerns relating to acid rain and on problems associated with development stresses on lakes. Acid rain inputs are monitored, including the monitoring of lakes and streams. The section also coordinates a sulphur dioxide emission testing program with industry.

The Acid Rain Reduction Agreement, signed with the federal government on February 15, 1988, notes that Nova Scotia uses as its objective for 1994 emissions of 204,000 tonnes of sulphur dioxide. During the fiscal year, staff notified senior officials of every pulp and paper company, oil refinery, and the Nova Scotia Power Corporation that cooperation was needed to establish a province-wide emissions monitoring program. Results have been favorable, enhancing efforts to review the state of the atmospheric environment in Nova Scotia.

Acid rain collectors were maintained at five locations around the province. Data for the decade between 1978 and 1987 was reviewed. Wet sulfate deposition has exceeded the 15 kilogram per hectare target for sensitive areas in all but two years (1983 and 1984).

A major two-year study was launched in the fiscal year to examine how the acid content of streams is changed by interaction with vegetation. The study was designed to review questions about the extent of pH influence in streams by naturally occurring organic acids.

The department initiated a small project in February 1989 to see if protection against acid loading could be provided to a small lake. Ten

tonnes of fine limestone were pumped through the ice at Bayers Lake. An additional 20 tonnes will be added in May 1989.

In June 1988, the Minister of the Environment exchanged visits with the Secretary of the Executive Office of Environmental Affairs from the Commonwealth of Massachusetts. They discussed similar problems and concerns in an effort to heighten awareness about acid rain, particularly in the U.S. Administration.

Lake Monitoring

The department experimented with a pair of lakes that experience heavy growths of algae during the summer months. One lake was treated with 500 kg of alum in an effort to remove excess phosphorus (hence algae) from the water. The other lake was used to show response of algae under controlled conditions. Some success was noted, and local residents were of the opinion that odor had been reduced. The lake will be treated once more in 1989 to further examine this method for reducing severe algae problems. Phosphorus emissions from a sewage treatment plant near Halifax were studied to better understand the importance of this source in causing problems with water weeds and algae in lakes.

Sustainable Development Initiatives

In the February 1989 Speech from the Throne the government announced its intention to promote an exchange of environmental concerns between the public, industry, and government. In order to accomplish this, the department, in cooperation with Voluntary Planning, will hold a conference in October 1989.

Other Activities

Staff in the section are also heavily involved in acid rain research projects totalling over $300,000. The projects are funded through the Donner (Canada) Foundation and the federal Department of Supply and Services. These projects, involving scientists from the Technical University of Nova Scotia, Dalhousie University, and the University of Minnesota, examine watershed processes that alter rainfall as it flows through soils and vegetation to streams and lakes. Study areas are centred around Halifax and in southwestern Nova Scotia between Liverpool and Kejimkujik National Park.

Environmental Review

The Environmental Review section was involved in the development of the Environmental Assessment Act, which was given royal assent on May 25, 1988.

In November, work began on the regulations, a program that includes extensive public consultation. A three-phase consultation process was launched in December with draft regulations being circulated within the department for comments. Later that month, the draft regulations were circulated to other provincial government departments and agencies and then distributed to interested members of the public for review and comment.

While this consultation process was being conducted, staff in the department reviewed environmental assessment legislation in Newfoundland, Quebec, Ontario, and Manitoba to study their procedures and obtain comments on Nova Scotia's proposed process.

Throughout the consultation process, staff met with interested groups and government agencies to explain the proposed regulations. Presentations were made to numerous sectors of Voluntary Planning, the Nova Scotia Power Corporation, the Chamber of Mineral Resources, the Department of Municipal Affairs, the Department of Industry, Trade and Technology, and many others.

At the end of the fiscal year the regulations were in the process of being redrafted in consideration of comments received from industry, government, and the public.

Pesticides Management

The Pesticides Management section is responsible for development and implementation of legislation pertaining to the safe handling, storage, and use of pesticides. The section works closely with the Pest Control Products Advisory Committee, which offers advice to the Minister on these matters. Staff in this section review permits for pesticide spraying, monitor spray programs, and conduct training for people who handle pesticides.

During the fiscal year ending in March 1989 the section processed 393 permit applications from around the province. Of these 343 were approved, 18 were rejected, 9 were cancelled by the proponent, and 23

were left on file. Staff inspected 1,052 sites and handled 941 inquiries regarding pesticide use.

WATER RESOURCES PLANNING SECTION

The Water Resources Planning Section has two areas of responsibility: Water Resources Services and Water Resources Inventory.

Water Resources Services

Staff of Water Resources Services provide advice and technical assistance to the public, industry, and government departments and agencies respecting the quality, use, and protection of surface and groundwater resources. Program highlights for the 1988–89 fiscal year include the following.

Review of Development Proposals

Staff review the effects that development proposals may have on water resources. These proposals can include subdivisions, industries, mines, exploration, solid waste, and highway alignment. During the year, technical assistance was provided for the following:

- Sysco modernization, the Sydney Tar Ponds Clean-Up, and the coke ovens demolition
- N.S.P.C. Thermal Power Plant, Trenton 6
- Gold exploration and mining at Tangier, Fifteen Mile Stream, Moose River, and Mooseland
- Coal mining activities at Victoria Junction and in Pictou County
- Slate quarry near Bridgewater, a magnetite deposit in Colchester County, and a quartzite quarry in Bedford
- Municipal waste disposal proposals in Halifax County, Queens County, Annapolis County, Inverness County, and Cumberland County
- Sewage disposal in Debert, Inverness County, and Annapolis County

- Private or industrial waste disposal proposals in Trenton, Yarmouth County, Halifax County, and Cape Breton County

- Review of hydrogeologic considerations for installation of underground storage tanks at over 300 sites

Water Quality Investigations

Staff provide information and make recommendations on water quality. During the year a major amount of time was committed to various investigations.

- Morton Road, Milton, Queens County. Hydrocarbons were detected in some private wells. A new single-well system has been installed with lines running to several properties providing those home owners with uncontaminated water.

- Waste disposal water quality monitoring, at Mount Uniacke, Parrsboro, Little Forks, Mount William, Kenloch, Kentville, River Denys, Georgefield, and Priestville

- Continued P.C.E. (tetrachloroethylene) investigation in Truro

- Investigation of tributyl tin oxide (TBT) in Lockeport

- Advice on polychlorinated biphenols (PCB) potential from certain older makes of pumps

In addition, as many as 700 individuals were assisted with general inquiries about water quality and water supply. Of these, about 40 investigations were associated with road de-icing salt complaints forwarded from the Department of Transportation and Communications. The second major source of complaint involved about 30 hydrocarbon contaminations.

Research and Development

Research and development includes assessment of existing water supplies and the potential of water resources. It also involves an evaluation of the quantity of a water supply. The section also processes all groundwater withdrawal applications.

Advice on these issues was supplied to the municipalities or communities of Truro, Springhill, New Minas, Shelburne and Brooklyn.

Assistance was provided for water production developments in Tatamagouche; Cape Dauphin, Victoria County; and Valley, Colchester County.

The Department of Government Services was given assistance for projects in Bridgewater, Balmoral Mills, Ship Harbour, Freeport, Mount Uniacke, Sheet Harbour, and Scotsburn. Institutions were assisted in Wentworth, Advocate and Chester Basin.

Water Resources Inventory

Staff in the Water Resources Inventory section compile, manage, and distribute information respecting wells drilled in the province, quantities of water flowing in streams, and water quality in surface and groundwater resources.

Excellent progress was made through the year in organizing all well logs in computer records. The system has proven to be operational, and all the logs for 1986, 1987, and 1988 have been recorded, numbering in excess of 7,000. These logs can be manipulated by computer much more efficiently than before.

The first stage of a four-year project to compile an inventory of water uses and water users was completed in the summer using the services of a casual employee. This work included identifying municipal and industrial supplies and organizations using water. This project will continue in the next fiscal year.

Gauging of surface water streams in partnership with Environment Canada has continued. In accord with a five-year development plan for the provincial hydrology network program, two new stations began operation.

Manual stream gauges were set up on Aconi (Fife) Brook, Cape Breton, and on Little West River, Sheet Harbour, to serve the needs of the Nova Scotia Power Corporation in assessing water supply potential for the proposed thermal power stations. A manual gauge was also set up on Smelt Brook to assist the Town of North Sydney Water Utility in assessing the Pottle Lake source.

Negotiations have proceeded satisfactorily toward a Canada–Nova Scotia Water Quality Monitoring Agreement. This may involve analysis of six samples taken annually from each of the 80 stations throughout Nova Scotia. Five wells and two lakes are included, but most stations are on rivers.

The Observation Well Monitoring program has continued, with six new wells being placed in service: Meteghan, East River Jordon, Mill Village, Halfway Brook, Stillwater, and North Grant. Data collection was intensified in the summer to ensure a weekly report on water level trends.

Major support was given to a Canadian Water and Wastewater Association survey on municipal water service metering. Tnis survey was part of a contract CWWA made with Environment Canada in cooperation with members of the Canadian Council of Environment Ministers. Metering of water services may have a significant impact on consumption.

WATER MANAGEMENT SECTION

The Water Management Section has two main program areas: reviewing water rights and watershed management.

Reviewing Water Rights

The section processes all applications under the Water Act. This includes permits and licenses relating to watercourse alteration and withdrawal of water for individual, municipal, industrial, agricultural, and other uses.

Of 410 applications received, 49 were for water use licenses, which are required to allocate the resource between competing users. The remaining 361 applications were for permits to work in a stream or to alter a stream channel.

Watershed Management

The section reviews applications from forest operators and private wood lot owners wishing to install bridges or culverts on forest access roads; 256 such applications were received in the fiscal year.

During the year, the James River Watershed, which is the water supply for the town of Antigonish, was designated a protected water area.

An erosion and sediment control display was completed for viewing during Environment Week. Staff also completed work on an erosion and sediment control handbook.

The Water Management Section also investigated a number of complaints from the public about damage to watercourses. Many of these complaints were associated with erosion causing siltation of the stream or illegal alterations to a watercourse and infilling around the shores of lakes.

FIELD SERVICES DIVISION

The Field Services Division provides a wide range of investigative activities and is responsible for conducting inspection and monitoring programs.

The division has five main areas of responsibility: Hazardous Waste Management, Water Well Management, Water Pollution Control, Air Quality Evaluation, and Environmental Engineering.

HAZARDOUS WASTE MANAGEMENT SECTION

The Hazardous Waste Management Section was busy through the fiscal year developing regulations relating to hazardous waste management. The following regulations were developed and implemented under the Dangerous Goods and Hazardous Wastes Management Act:

- Waste Oil Regulations (effective November 1, 1988) control the use and disposal of waste oil and contaminated waste oil
- PCB Storage Regulations (effective November 8, 1988) outline specific requirements for facilities that are storing PCB wastes in Nova Scotia
- Asbestos Waste Regulations (effective December 14, 1988) place controls on the handling and disposal of waste materials containing asbestos

Inspections of all PCB storage facilities were carried out, and efforts were made to bring them into compliance with the regulations.

A procedure for licensing waste oil collectors under the Waste Oil Regulations was implemented. There are now nine licensed collectors for waste oil in the province.

A program was commenced to inspect and approve disposal sites for waste asbestos under the Asbestos Regulations. The program involves meeting with municipal officials responsible for landfill operations and advising them on the proper disposal procedures.

Enforcement of the Petroleum Storage Regulations was expanded; registration is now complete for approximately 11,000 storage tanks.

A training program was implemented for contractors who are installing and removing petroleum storage tanks, and the certification of contractors is ongoing.

A clean-up was undertaken by the department at Canchem Inc., a hazardous waste storage facility in Hammonds Plains, Halifax County. Legal action against the owner/operator is in progress.

The section was involved in a Household Hazardous Waste Collection Day for the Halifax/Dartmouth area on October 22, 1988. The event was organized by the Ecology Action Centre with technical and financial support from the Nova Scotia Department of the Environment.

The emergency response group was involved in the investigation of and/or response to approximately 450–500 spills, leaks, or complaints involving petroleum products or other dangerous goods.

The section was involved in the coordination of clean-up efforts as the result of a fire in a chemical storage room at Mira Road School in Sydney.

Staff organized a one-week course offered by Transport Canada on the federal Transportation of Dangerous Goods Regulations.

The section ran a number of information seminars for hospitals throughout the province outlining the requirements for transporting their infectious wastes, samples, and other dangerous goods.

Work began with the city of Dartmouth on a pilot hazardous waste transfer facility for the Burnside area.

The section was involved in the demolition of the coke ovens in Sydney with an emphasis on the hazardous waste disposal aspect.

A working group was established to assess the emergency response to situations involving dangerous goods and hazardous wastes. Representation comes from various sectors involved in emergency response. The group will address items 13 to 19 of the Report of the Minister's Task Force on Hazardous Waste Management.

WATER WELL MANAGEMENT SECTION

The Water Well Management Section administers the provisions of the

Well Drilling Act and Regulations under the supervision of the Chief Well Inspector.

Approximately 3,000 wells are constructed annually in Nova Scotia, and 50 per cent of the province's population depends on wells for their water supply. Water Well Management ensures that the public receives quality workmanship in well construction through a licensing system for well construction contractors, thus protecting water supplies. The water well management program also includes the Well Drilling Advisory Board, which is appointed by Order-in-Council to advise the Minister on matters pertaining to well drilling in the province.

In an effort to promote high standards of water well construction within the industry, well drilling schools and participation in provincial water well conventions were begun in 1965, and on occasion, various technical courses have been offered and have been met with good response.

During the fiscal year 1988–89, the well inspection staff reviewed 21 applications for new well construction licenses, 18 of which were approved by the advisory board. Sixteen of these were for backhoe operations, while two licenses were granted for operating rotary or cable tool equipment. The province is set up into four inspection zones:

- Halifax and Hants counties
- South Shore and Valley areas
- Pictou, Colchester, Cumberland, and Antigonish
- Cape Breton Island and Guysborough County

A number of complaints and inquiries under the Well Drilling Act were received and investigated. These included construction problems such as improper sealing of casings and faulty installation of pumps in both shallow and deep wells. Complaints were also investigated regarding contamination by road salt, gas, or oil spills and natural conditions such as saltwater intrusion near the coast or drainage of septic material through fractured bedrock. Complaints were resolved by department staff, with one investigation resulting in charges under the Act.

The section also provides a supervisory service for major well construction projects. During 1988–89 these included provision of water supplies for various communities, industries, and school boards throughout the province.

WATER POLLUTION CONTROL SECTION

The Water Pollution Control Section offers a wide variety of services, from promoting proper operation of wastewater treatment facilities to responding to complaints related to water pollution. Over 3,700 inquiries were dealt with during the fiscal year.

Water Pollution Control Section staff inspect the operation of water and wastewater treatment plants across Nova Scotia. They examine whether the plants are operating up to standard. If not, an advisement or Ministerial Control Order can be issued noting changes that must be made in the operation of the facility.

The section carried out almost 2,500 inspections during the fiscal year and submitted 2,358 samples for laboratory analysis. Follow-up investigations numbered over 1,000 and instances of section personnel providing technical assistance were near 1,100.

Field offices provide laboratory services to owners and operators of treatment facilities and provide first-line emergency response and follow-up inspections on emergency problems as required.

Over 40 industrial pollution discharges are sampled by this section in cooperation with the Environmental Protection Service of Environment Canada. When a problem is identified, an appropriate response is undertaken.

Efforts of the section resulted in improvements in wastewater treatment provision in Westville, Bridgewater, and the Shubenacadie River by the Municipality of East Hants.

The Middleton Regional Office documented problems during the summer in both the Cornwallis and Annapolis rivers, including inadequate sewage treatment, agricultural runoff, and manure spills, all of which caused negative environmental impact on the rivers.

Through the efforts of the regional office, a major improvement is underway in pollution control for the town of Yarmouth and surrounding areas.

Certification

In July 1988 the Minister invited all municipalities in Nova Scotia to

participate in the Atlantic Canada Voluntary Certification Program for water and wastewater treatment facility owners and operators.

Those participating are required to pass a standard examination set by the Association of Boards of Certification. After successful completion of the examination, the operator must apply to the Board and meet additional education and experience requirements before being eligible to be certified.

Derelict Vehicles

In May the Minister invited all municipal units to participate in a revitalized derelict vehicle program. Twenty-two municipal units participated and 5,365 derelict vehicles were collected. They were then sent to salvage yards for crushing so they could be transported out of the province for shredding and recycling.

Recycling and Litter Abatement

The Minister appointed a Task Force on Litter Abatement in April. This was headed by Mrs. Dorothy Grant, assisted by 10 members, with organizational help provided by the Clean Nova Scotia Foundation and this section. The task force held public meetings throughout the province during the summer months and came back to government with recommendations which were adopted.

In response to the Task Force recommendations, the department is involved in initiatives along several broad fronts: public education, combating highway litter, broader-based litter prevention and control at the municipal level, encouraging and carrying out cleanup programs, supporting recycling and recyclers, and significantly encouraging the diversion of waste from landfills.

The Minister announced plans for a major initiative in waste management strategy that can reduce the amount of waste going to landfills by 20 to 30 per cent. A Resource Recovery Fund will require a substantial financial contribution from industry, and plans to enlist this type of support will continue.

The department through this section has promoted and carried out two inservice recycling projects dealing with government telephone books and MT&T telephone books. Nearly 20,000 pounds of phone books were recycled from metro area provincial government offices.

This section provides advice and support to the Clean Nova Scotia Foundation, a non-profit organization dedicated to involving the public in promoting a clean and litter-free Nova Scotia. Plans are proceeding to organize an annual province-wide spring clean-up, and the foundation is also organizing a coastal beach clean-up on behalf of the department. As well, plans are moving ahead for an Automobile Litter Bag Program with distribution and retrieval of litter bags through service stations.

The section was instrumental in the planning of two pilot recycling programs in Nova Scotia. Queens County will offer a drop-off system to residents, while Kings County will offer curbside collection.

In supporting recycling initiatives such as these, the department subsidizes the transportation of glass through the Nova Scotia Bottle Dealers and Recyclers Association, which is expected to achieve recycling of the equivalent of 15 million glass beverage containers this year.

This section offered assistance to the Girl Guides of Canada in a survey of household attitudes towards recycling. The survey is being sponsored by the department with over 3,000 questionnaires completed. The analysis is expected to be finished early in the summer of 1989.

AIR QUALITY EVALUATION SECTION

The Air Quality Evaluation Section is responsible for gathering air quality data from around the province, measuring pollutants, and developing guidelines for improvements. During the fiscal year 1988–89 the section conducted the programs described below. As well, a total of 326 complaints or inquiries were handled by staff during the year.

Air Monitoring

Ambient air monitoring equipment was operated in the Sydney/Glace Bay area, Port Hawkesbury, Pictou, and Halifax/Dartmouth. Parameters monitored include sulphur dioxide, nitrogen dioxide, hydrogen sulfide, ozone, carbon monoxide, and total suspended particulate. A total of 23 continuous air monitoring instruments and 16 high-volume samplers were operated during the year.

Improvements were made to the air monitoring network to allow for instantaneous retrieval of data by computer from any monitor in the province.

The ambient air monitoring station in Pictou was moved in order to gather data from a more populated area of the town.

Coal Dust Studies

Two air quality surveys related to potential or suspected coal dust problems were undertaken in Cape Breton. Suspended particulate measurements were taken along Grand Lake Road outside of Sydney to establish the impact of coal trucking operations on this section of the highway.

An intensive summer study of suspended particulate levels in the vicinity of the International Pier was undertaken to establish background levels prior to the expansion of the coal shipping operation at this operation.

Sydney Tar Ponds Clean-up

Air emission criteria were developed for the proposed incinerator for the Tar Ponds Project in Sydney. These criteria are among the most stringent in the world at this time.

Biomedical Waste Incineration

A great deal of work was conducted in the field of biomedical waste incineration. The section assisted in the development of the Council of Teaching Hospitals document *Guidelines for the Handling and Disposal of Biomedical Wastes from Nova Scotia Health Care Facilities and Laboratories.* A *Guideline for the Design and Operation of Biomedical Incinerators* was produced and Biomedical Waste Incinerator Regulations were developed and implemented.

As well, a survey of all existing hospital biomedical waste incinerators was conducted to assist in the development of a replacement strategy.

ENVIRONMENTAL ENGINEERING GROUP

The Environmental Engineering Group, located in Truro, provides regional response to environmental concerns, complaints, and inquiries. On a province-wide basis, the office provides ice and snow monitoring, flood forecasting, and coastal erosion investigations. The major function of the group is the delivery of the 100 per cent provincially funded Stream

Maintenance Program, the completion of special environmental engineering projects, including coastal breakwaters in response to emergencies and resource restoration requirements, and the cost-shared Streambank Stabilization and Protection Policy.

Stream Maintenance Program

The following river projects, which were initiated in 1987–88, were completed under the 100 per cent provincially funded Stream Maintenance Program.

Debert River, Colchester Co., Phase II (Awalt Site) $6,962.16

Channel construction and reinforcement was carried out on a 1,500-foot length of river downstream from the Soley Factory Bridge.

Flow diverting from the original channel had been causing erosion and environmental damage to interval lands, creating downstream alignment/stability problems. Approximately 440 tons of rip-rap were placed to stabilize this section of channel.

Salmon River, Colchester Co., Phase II (Gates Site) $3,209.55

Bank stabilization work was completed on a 1,400-foot section of channel, which was reconstructed to develop a more streamlined river reach.

This location is prone to ice jams, causing flood concerns for adjacent agriculture land and area residents. Approximately 325 tons of rock were used for stabilization of this site.

Environmental Engineering Projects

Staff of this section completed a number of environmental engineering projects as outlined below:

Shore Road, Eastern Passage, Halifax Co. ($35,800.00)

Approximately 400 feet of coastline were stabilized along the Lewis, Hamilton, and Morash properties.

A quarry-stone revetment, consisting of 4,100 tons of rock (armor) material, was constructed to protect homes and prevent further loss of property.

Cheticamp Harbour, Cheticamp, Inverness Co. ($27,811.40)

Approximately 240 feet of harbor frontage was stabilized along the Camus, Roach, and Larade properties.

Approximately 2,300 tons of rock (armor) material was placed to protect homes and prevent further loss of property.

Stewiacke River, Birch Hill, Colchester Co. ($2,940.00)

A major channel blockage consisting of large trees and debris in the vicinity of the James Crouse property was removed.

The blockage was restricting river flows, causing river bank erosion and interfering with canoe navigation in a prime location for salmon fishing.

Habitant Creek, Village of Canning, Kings Co. ($3,150.00)

Final site clean-up and improvements were carried out in the area adjacent to Habitant Creek on Main Street, Canning, where a quarry stone slope stabilization structure was installed the previous year.

The structure was necessary to replace a deteriorating timber-crib, which was contributing to loss of foundation support under a number of commercial establishments along Main Street.

Peters Brook, Victoria Co., Debris Dam Removal ($2,016.00)

A debris dam was removed from Peters Brook near the William Fownes property.

The blockage was causing channel diversion, flooding, and fish passage problems in the brook.

Riversdale, Colchester Co., Roadside Dump/Landslide Clean-up ($11,985.00)

There was a roadside embankment failure into a gorge along the east side of Riversdale-Burnside Road, taking with it an illegal roadside dump.

The mud and garbage plugged the course of a tributary to Calvary River. The brook was flowing over, around, and through garbage and then

discharging into Calvary River, which flows to the Salmon River running through Truro. The garbage was removed and the tributary channel stabilized with the placement of approximately 1,900 tons of rock.

Wilkie Brook, Sugar Loaf, Victoria Co., Debris Blockage Removal ($2,525.00)

Debris removal and restoration was carried out on an approximately 150-foot section of Wilkie Brook.

A debris blockage in the brook was causing flow diversion, which posed a threat of flooding to three adjacent homes and properties belonging to Danina MacLellan and others. This work was carried out at the request of Emergency Measures Organization (N.S.)

Rainstorm Damage, Colchester Co., (Flood Damage E.M.O.) ($35,500.00)

As a result of a record rainstorm in October 1988, major flood damage resulted at numerous locations along watercourses throughout the county of Colchester. The locations included sites on the Debert, Chiganois, Salmon, North, and Wallace rivers. Working in consultation with the Emergency Measures Organization, necessary repairs were carried out on an emergency basis to prepare for the traditional freshets of December and February. Without the repairs several homes and roadways would have been threatened at spring thaw. The projects included repairs to dykes, erosion protection/stabilization work, and debris removal. Approximately 3,075 tons of rock stabilization material were used in this work.

Environmental Enhancement Summer Employment Program ($327,341.82)

The major project undertaken by the Truro office during 1988–89 was the coordination and management of the Environmental Enhancement Summer Employment Program (E.E.S.E.P.) during the summer months. A total of 262 young people were hired during the nine-week program. The province was divided up into six areas served by offices of the department. Regional staff were instrumental in identifying work sites, hiring crews, and arranging litter disposal. Crew numbers were as follows: Halifax (44), Valley Yarmouth (32), Truro (47), Pictou (37), Port Hawkesbury (40), and Sydney (62).

UTILITIES DIVISION

This division is responsible for the operation and management of all provincially owned industrial water supplies and waste treatment facilities. These facilities include 11 water supply stations, one sewage treatment plant, and one industrial waste treatment facility.

Water pumping stations include saltwater supply plants at Grand Etang and Lockport, freshwater supplies at Cheticamp, Port Hawkesbury, Canso, Pictou, Chester, Riverport, Lockeport, and Middle and Lower West Pubnico. A treated freshwater supply system is maintained in Lockeport.

Capital projects carried out during the year included:

- Modifications to the Boat Harbour aeration system were begun on site in Pictou County.
- Operations in Cheticamp were expanded to include a new source of water supply.
- The Grand Etang facility was moved to utilize a new source of supply.
- Modifications to the Hayden Lake Treatment Plant were made at the Shelburne County site.

ADMINISTRATION AND FINANCE DIVISION

The Administration and Finance Division provides administrative financial support and central support services to the operational divisions of the department. There are three activity centres to this division: the Office of the Minister and Deputy Minister, Information and Education Services, and Administrative Support Services.

OFFICE OF THE MINISTER AND DEPUTY MINISTER

The Office of the Minister and Deputy Minister provides liaison with municipal, provincial, and federal agencies and provides recommendations to the provincial Cabinet on environmental policies and legislation.

INFORMATION AND EDUCATION SERVICES

Information and Education Services provides a coordinated departmental liaison with the public, the media, and the Environmental Control Council.

Staff in this section also provide research and secretarial services to the Environmental Control Council. This includes arranging all meetings of the Council and researching environmental issues for Council members.

During the year, the section answered numerous inquiries from the public and school students in Nova Scotia. Staff provided these people with current information on emerging environmental issues and arranged for many visits to schools.

This section is responsible for annual Environmental Week activities, which promote a public awareness of environmental issues in Nova Scotia. Staff also offer advice to many groups and organizations wishing to conduct Environment Week projects.

ADMINISTRATIVE SUPPORT SERVICES

The administrative and financial support functions that this activity provides to the department include: accounting, personnel, central filing, central stationery and inventory control, as well as day-to-day management of the operations of the office facility and its equipment. Also, a specialized environmental library-research facility is maintained for use by educational institutions consultants, industry, and other government agencies.

GENERAL

ENVIRONMENTAL EMERGENCIES

The Nova Scotia Department of the Environment cooperates with all other provincial and federal departments to ensure a coordinated and integrated response to all spill incidents. The department's involvement varies depending on the spill circumstances and includes designating disposal sites and recommending debris disposal procedures.

In Nova Scotia, all oil or chemical spills must be reported to 426-6030 in the Halifax/Dartmouth metropolitan area, or 1-800-565-1633 elsewhere in the province. These reporting numbers connect to the 24-hour operator at the Canadian Coast Guard Traffic Centre in Dartmouth, fulfilling the legal reporting obligations of all the environmental regulatory agencies.

NOVA SCOTIA ENVIRONMENTAL CONTROL COUNCIL

The Environmental Control Council is a 12- to 15-member advisory board offering advice to the Minister of the Environment. Under the jurisdiction of the Environmental Protection Act, membership includes representation from health, law, engineering, industry, labor, municipal government, conservation or ecology groups, agriculture, academic, forestry, and fisheries. The Council is supported by an Executive Secretary. The Deputy Minister of the Nova Scotia Department of the Environment is an ex-officio member.

The Council offers annual awards in recognition of outstanding environmental service in seven categories: individual, groups, organizations, education, youth, government, and industry. Details about the Environmental Awards program, activities of the council, and a copy of its annual report can be obtained by contacting:

The Executive Secretary
Nova Scotia Environmental Control Council
P.O. Box 2107
Halifax, Nova Scotia
B3J 3B7
Phone (902) 424-5300

WELL DRILLING ADVISORY BOARD

This industry/government advisory board was established under the Well Drilling Act to provide advice to the Minister on regulations and standards for the industry. The board meets on a regular basis respecting well drilling and related problems. It also helps the department examine applications and qualifications, and makes subsequent recommendations for licensing under the Act.

CANADA–NOVA SCOTIA FLOOD DAMAGE REDUCTION PROGRAM

In June 1978, the province entered into a joint Canada/Nova Scotia Flood Damage Reduction Program. It is funded equally with the federal government under the Canada–Nova Scotia General Agreement Respecting Flood Damage.

This program attempts to reduce flood damage by identifying flood-prone areas and recommending measures to prevent or reduce damage. It also provides information to the public to ensure safety and restrict private and public development in flood-prone areas.

Information about the program and reports can be obtained by contacting:

Environment Canada
Inland Waters Directorate
4th Floor, Queen Square
45 Alderney Drive
Dartmouth, Nova Scotia
B2Y 2N6
Phone: 426-3266

Nova Scotia Department
of the Environment
5th Floor
5151 Terminal Road
Halifax, Nova Scotia
B3J 3B7
Phone: 424-5300

ADVISORY GROUPS

Petite Rivière Watershed Advisory Group
Queens County Medway–Mersey Watershed Advisory Group
Sable Island Advisory Committee

COMMITTEES

C.C.M.E. Waste Management Committee
Canadian Association of Pest Control Officials
Atlantic Region Pesticide Advisory Committee

Pest Control Products Advisory Committee
Nova Scotia Gypsy Moth Committee
Atlantic Region Pesticide Work Group
Federal Pesticide Registration Review
Pest Control Products Advisory Committee
Manure Management Task Group
Task Force on Provincial Pesticide Training Officers
Atlantic Region Pesticide Work Group
Atlantic Vegetation Management Association
Annapolis and Cornwallis River Committee
The Nova Scotia Well Drilling Advisory Board
The Nova Scotia Well Drilling Association
The Atlantic Water Well Group and School
County Board and Health and Municipal Planning Group, Re: Water Well Management
Canadian Water Well Group
Cape Breton Development Corporation, Fine Tailings Basin Committee
Lingan Waste Rock Committee
Bras d'Or Lakes Integrated Resource Committee
Steering Committee—Coke Ovens Demolition
Sydney River Watershed Committee
Environmental Engineering Technology Advisory Board
James River Watershed Committee
Sydney River Watershed Committee
Waterford Lake Protection Committee
Pottle Lake Watershed Committee
Kelly Rock Project Review Committee
Environmental Engineering Technology Advisory Board
Level III, Nova Scotia Government Employees Union
Local I, Nova Scotia Government Employees Union
Atlantic Canada Chapter, Air Pollution Control Association (APCA) now the Air and Waste Management Association (AWMA)
Government Sector, United Way of Cape Breton
Nova Scotia Roadbuilders Association
Regional Ocean Dumping Advisory Committee (RODAC)
Development in Slate Committee
Tar Ponds Citizens Information Committee
Coke Ovens Demolition Committee
Shubenacadie/Grand Lake Advisory Board
Lake Major Watershed Advisory Board
Advisory Panel on Erosion and Sediment Control
Technical Committee Flood Damage Reduction Program

Deputy Ministers Land Use Policy Committee
—Beaches Issue Group
—Soil and Water Conservation Issue Group
—Agricultural Issue Group
Alternate on Lake Major Watershed Advisory Board
Subcommittee of Pockwock Management Committee
Truro Watershed Management Committee
Port Hawkesbury Centennial Project Committee—involved in parks and beautification as well as attempts to introduce recycling in Port Hawkesbury
Lake and Waterways Advisory Committee (Halifax)
Inter-Departmental Technical Flood Committee
Roadside Rest Areas
Occupational Health and Safety
Colchester Joint Flood Advisory
Thematic Mapping Project Committee (N.S. Coastal Zone)
The Pictou County Community Futures Committee
The Pictou Harbour Study Committee
Mount William Landfill Concerned Citizens Committee